

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (original). A method for deriving a three-dimensional model of a scene from a plurality of images of the scene, said method comprising the steps of:

(a) generating a plurality of three-dimensional panoramic images of a scene, wherein each three-dimensional panoramic image is derived from a plurality of range images captured from a distinct spatial position;

(b) determining transformations that align the plurality of three-dimensional panoramic images;

(c) integrating spatial information from the plurality of three-dimensional panoramic images to form a spatial three-dimensional model of the scene; and

(d) integrating intensity and texture information from the plurality of three-dimensional panoramic images onto the spatial three-dimensional model to form a three-dimensional model of the scene containing both spatial and intensity information.

2 (currently amended). ~~The method as claimed in claim 1,~~ A method for deriving a three-dimensional model of a scene from a plurality of images of the scene, said method comprising the steps of:

(a) generating a plurality of three-dimensional panoramic images of a scene, wherein each three-dimensional panoramic image is derived from a plurality of range images captured from a distinct spatial position;

(b) determining transformations that align the plurality of three-dimensional panoramic images;

(c) integrating spatial information from the plurality of three-dimensional panoramic images to form a spatial three-dimensional model of the scene; and

(d) integrating intensity and texture information from the plurality of three-dimensional panoramic images onto the spatial three-dimensional model to form a three-dimensional model of the scene containing both spatial and intensity information;

wherein the step (a) of generating a plurality of three-dimensional panoramic images further comprises:

- (a i) positioning a camera at a first distinct spatial location;
- (a ii) acquiring the plurality of range images of the scene by rotating the camera about a vertical axis relative to the scene, wherein there is an inter-overlap region between adjacent images;
- (a iii) forming a three-dimensional panoramic image about the vertical axis from the plurality of range images acquired in step (a ii); and
- (a iv) generating a plurality of three-dimensional panoramic images by repeating steps (a i) through (a iii) at additional spatial positions in the scene.

3 (original). The method as claimed in claim 2, wherein the camera is a scannerless range imaging camera.

4 (original). The method as claimed in claim 1, wherein the step (b) of determining the transformations that align the plurality of three-dimensional panoramic images further comprises:

- (a) determining one or more pairs of three-dimensional panoramic images that contain some common scene information;
- (b) determining the transformations that align each pair of three-dimensional panoramic images that contain some common scene information; and
- (c) determining global inconsistencies in the transformations found in step (b).

5 (original). The method as claimed in claim 1, wherein the step (d) of integrating the intensity and texture information from the plurality of three-dimensional panoramic images assumes a Lambertian reflectance model.

6 (original). The method as claimed in claim 1, wherein the step (d) of integrating the intensity and texture information from the plurality of three-dimensional panoramic images assumes a reflectance model that depends on the viewpoint of the observer.

7 (original). The method as claimed in claim 1, wherein the three-dimensional panoramic image is a color image.

8 (original). The method as claimed in claim 1, wherein one or more range images are juxtaposed between a pair of three-dimensional panoramic images before initiating the step (b) of determining the transformations that align the plurality of three-dimensional panoramic images.

9 (original). A computer program product for deriving a three-dimensional model of a scene from a plurality of three-dimensional panoramic images of a scene, wherein each three-dimensional panoramic image is derived from a plurality of range images captured from a distinct spatial position; said computer program product comprising a computer readable storage medium having a computer program stored thereon for performing the steps of:

(a) determining transformations that align the plurality of three-dimensional panoramic images;

(b) integrating spatial information from the plurality of three-dimensional panoramic images to form a spatial three-dimensional model of the scene; and

(c) integrating intensity and texture information from the plurality of three-dimensional panoramic images onto the spatial three-dimensional model to form a three-dimensional model of the scene containing both spatial and intensity information.

10 (original). The computer program product as claimed in claim 9 wherein the step (a) of determining the transformations that align the plurality of three-dimensional panoramic images further comprises:

(a) determining one or more pairs of three-dimensional panoramic images that contain some common scene information;

(b) determining the transformations that align each pair of three-dimensional panoramic images that contain some common scene information; and
(c) determining global inconsistencies in the transformations found in step (b).

11 (original). The computer program product as claimed in claim 9 wherein the step (c) of integrating the intensity and texture information from the plurality of three-dimensional panoramic images assumes a Lambertian reflectance model.

12 (original). The computer program product as claimed in claim 9 wherein the step (c) of integrating the intensity and texture information from the plurality of three-dimensional panoramic images assumes a reflectance model that depends on the viewpoint of the observer.

13 (original). The computer program product as claimed in claim 9 wherein the three-dimensional panoramic image is a color image.

14 (original). The computer program product as claimed in claim 9 wherein one or more range images are juxtaposed between a pair of three-dimensional panoramic images before initiating the step (a) of determining the transformations that align the plurality of three-dimensional panoramic images.

15 (new). A method for deriving a three-dimensional model of a scene, said method comprising the steps of:

generating a plurality of three-dimensional panoramic images, wherein each of said three-dimensional panoramic images is derived from a respective set of range images, each said set having a different nodal point;
determining global registration positions of a plurality of three-dimensional panoramic images of a scene to provide registered three-dimensional panoramic images;
integrating spatial information from said registered three-dimensional panoramic images to form a spatial three-dimensional model of the scene; and

integrating intensity and texture information from said three-dimensional panoramic images into said spatial three-dimensional model to form a three-dimensional model of the scene containing both spatial and intensity information.

16 (new). The method of claim 15 wherein each said set has a plurality of range images all having the respective said nodal point.

17 (new). The method of claim 16 further comprising capturing each said set of range images.

18 (new). A method for deriving a three-dimensional model of a scene from a plurality of three-dimensional panoramic images of a scene, wherein each of said three-dimensional panoramic images is derived from a respective set of range images, each said set having a different nodal point; said method comprising the steps of:

determining global registration positions of said three-dimensional panoramic images to provide registered three-dimensional panoramic images;

integrating spatial information from the plurality of three-dimensional panoramic images to form a spatial three-dimensional model of the scene; and

integrating intensity and texture information from the plurality of three-dimensional panoramic images into the spatial three-dimensional model to form a three-dimensional model of the scene containing both spatial and intensity information.

19 (new). The method of claim 18 wherein said determining step further comprises:

determining one or more pairs of three-dimensional panoramic images that contain some common scene information;

determining the transformations that align each pair of three-dimensional panoramic images that contain some common scene information; and

determining global inconsistencies in said transformations.

20 (new). The method of claim 18 wherein said determining step further comprises:

converting each said three dimensional panoramic range image into a mesh representation;

identifying overlapping mesh representations;

computing local transformations representing respective said registrations; and

checking global consistency of said local transformations.